

Closing Address

- PRESENTER TRAVIS LARKIN | THE SEAFOOD EXCHANGE

GLOBAL OUTLOOK FOR AQUACULTURE LEADERSHIP
GUANGZHOU, CHINA | DAY 2
HEALTHY FISH | HEALTHY PEOPLE | HEALTHY PLANET

16th Year!



GOML

2016 Guangzhou China

HEALTHY FISH | HEALTHY PEOPLE | HEALTHY PLANET

Healthy People Indeed (well, younger back then anyway)

“GSOL” 2002 – Bali, Indonesia

Hold on...Did George
end up wearing one of
those last night?



L-R: Greg Brown, John Pollock, Yours Truly

And Today...Still Surviving



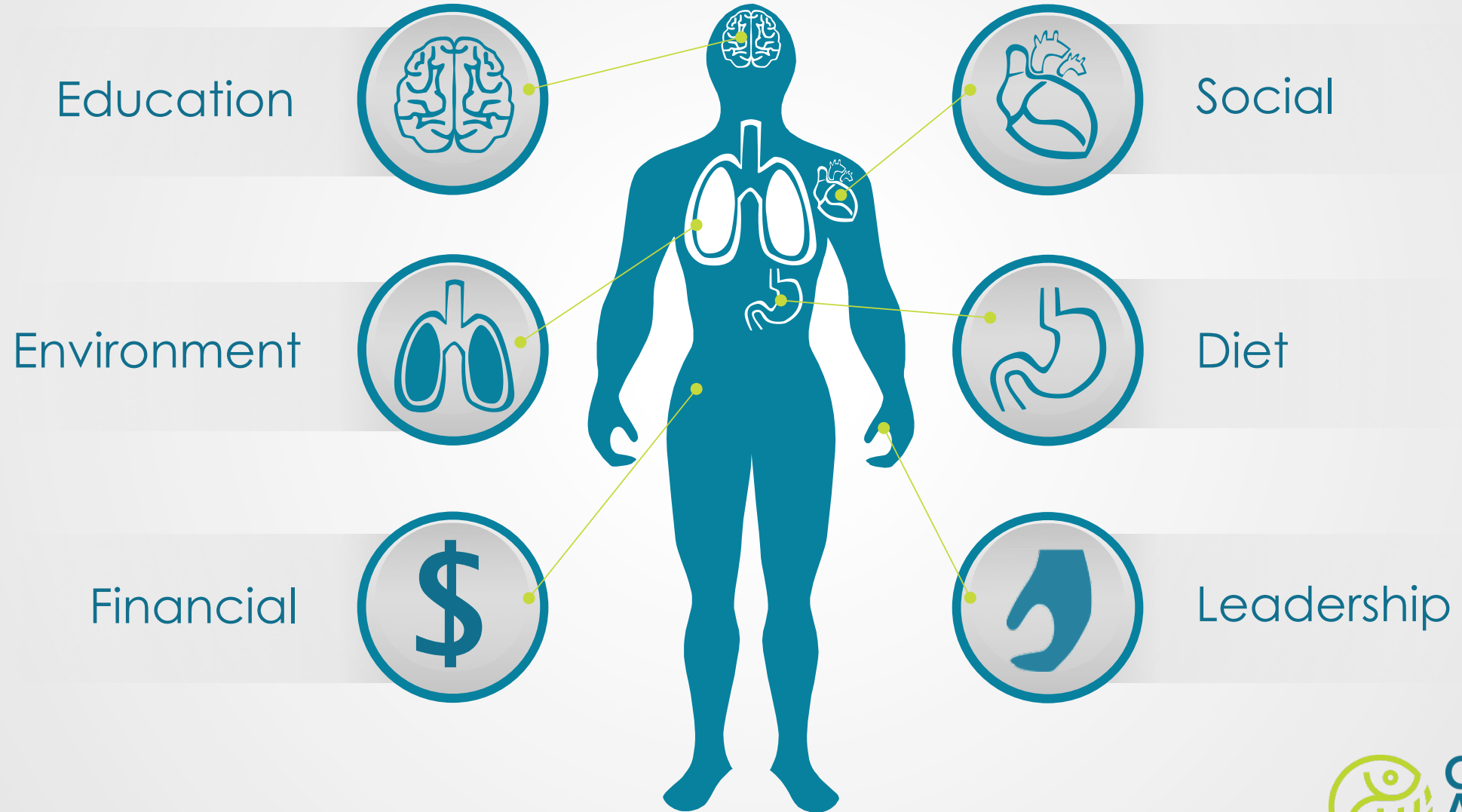
19th ANNIVERSARY



Global Aquaculture Alliance™

HOW 'HEALTHY' IS AQUACULTURE?

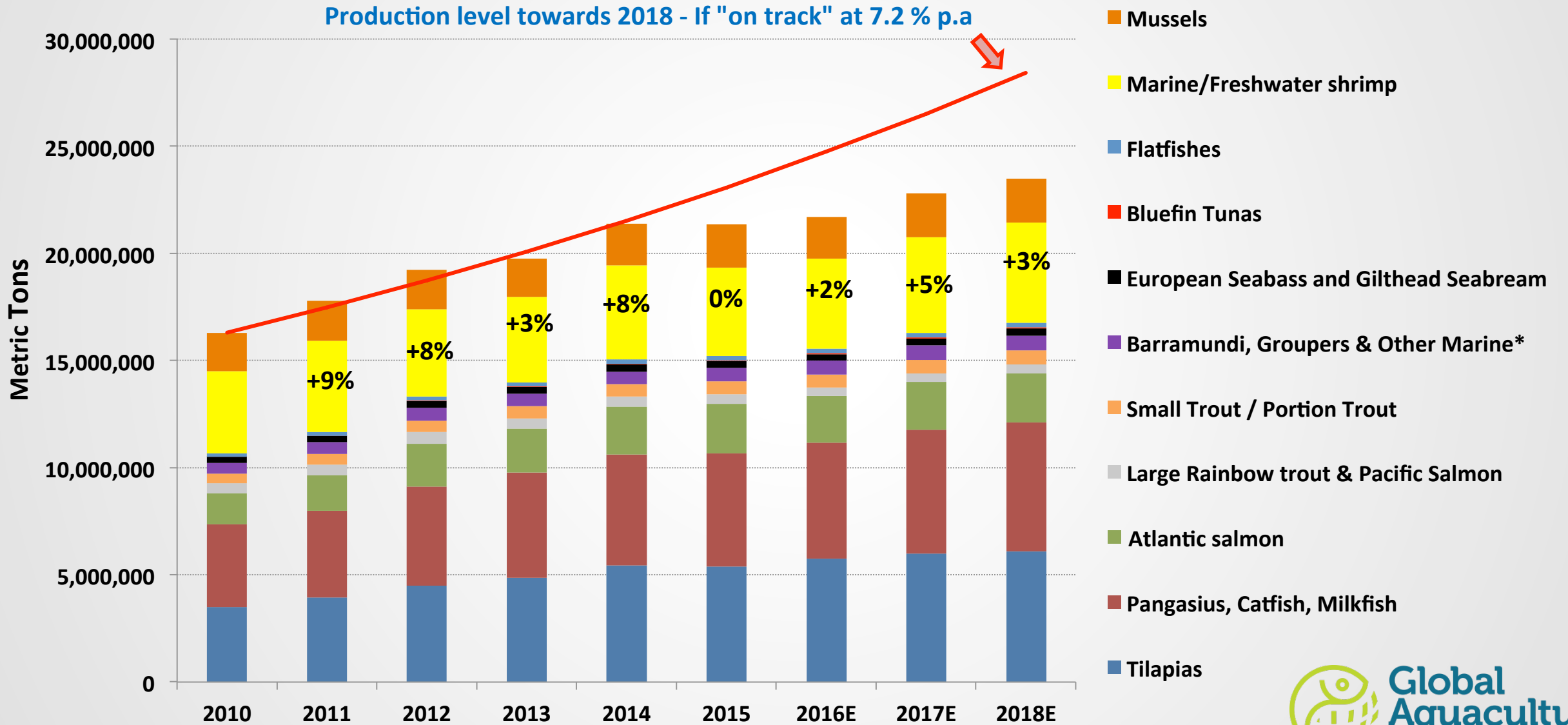
Aquaculture is a young adult



A close-up photograph of a large pile of fresh fish, likely salmon, with a white border around the text. The fish are piled together, showing their scales and fins. The text is overlaid on the image in a large, white, sans-serif font.

**We need to
produce 140
million additional
tons of fish by
2050**

DOUBLE IN A DECADE?



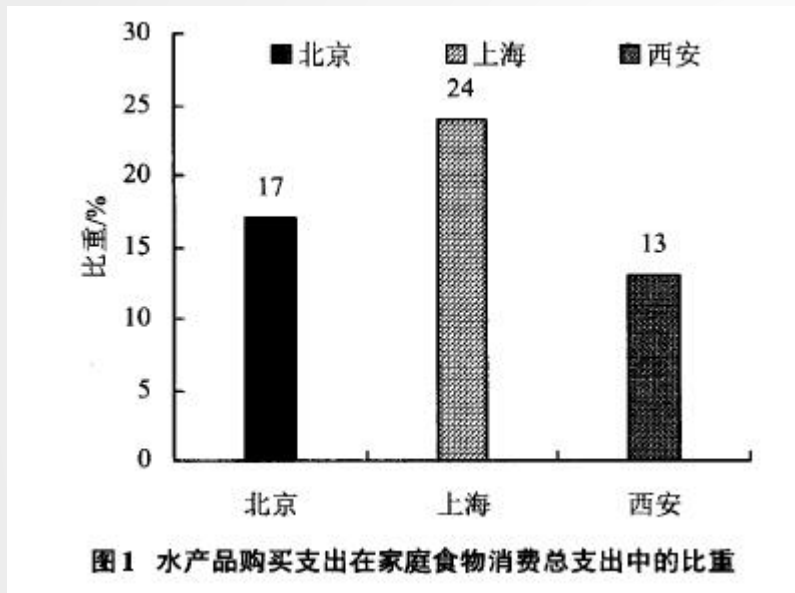
PROF. STEVENS GRADES INDUSTRY AT GOAL 2015

Disease	D
Feed	C
Environment	B
Social Responsibility	D
Market Support	B
Investor Support	C
Leadership	Incomplete
Consumer Awareness	C

How are we doing this year?

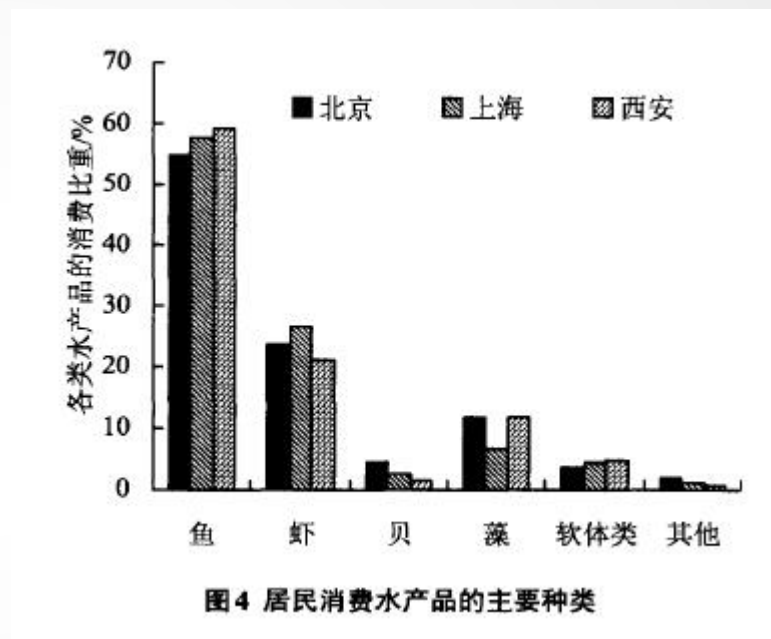
Strong Seafood Consumption in China

Beijing Shanghai Xi'an



Seafood as a percentage of total family food expenses

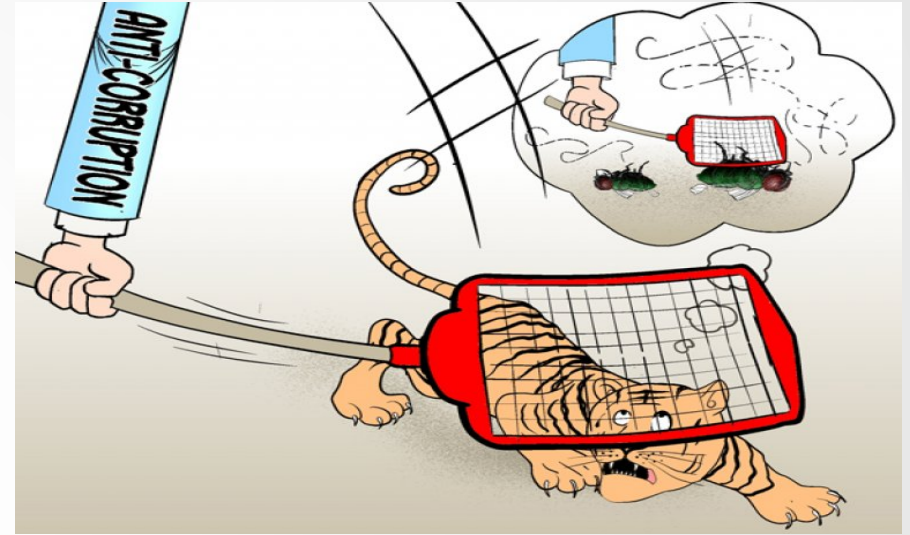
Beijing Shanghai Xi'an



Different seafood consumption proportion

But...risks to seafood consumption

- Crack down by government on corruption, including banquets
- Potential crackdown on gray trading
- Wider economic slowdown



Disease – Still Our Primary Challenge

Common Issues:

1. High concentration of producers in certain regions
2. Uncontrolled movement of animals
3. Insufficient knowledge about the pathogen
4. Weak regulations, ineffective strategies and limited resources to prevent spread
5. Production losses, antibiotic residues

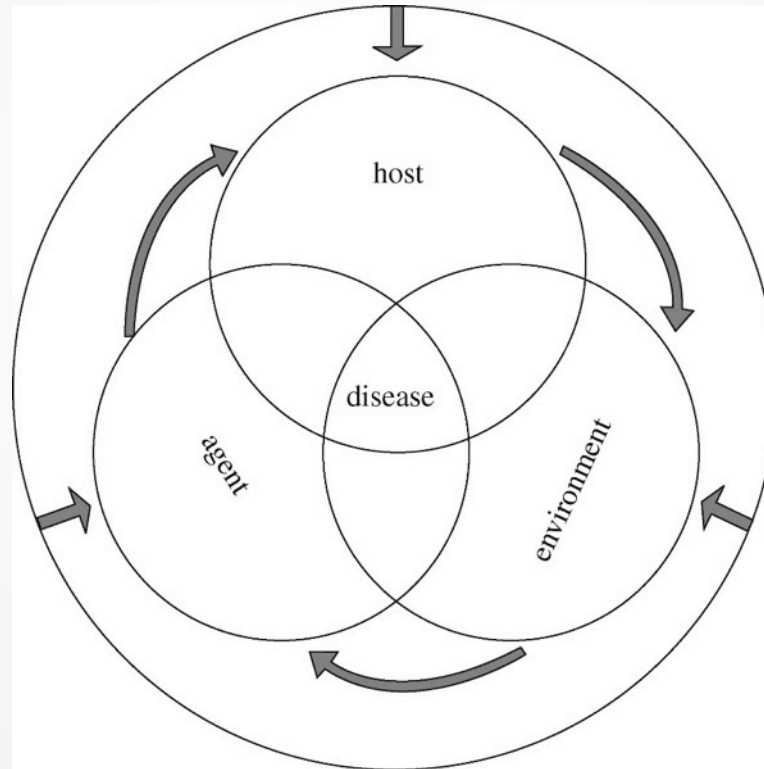
What Works?

- No magic “Silver Bullet” solutions
- Applying the disciplines of HACCP
 - Hazard analysis, risk assessment, control points
- Integrated Health Management
 - Diagnostic testing, breeding, vaccines, biosecurity, sanitation, husbandry practices
- Biosecurity Area Management
 - How producers can work together to reduce diseases



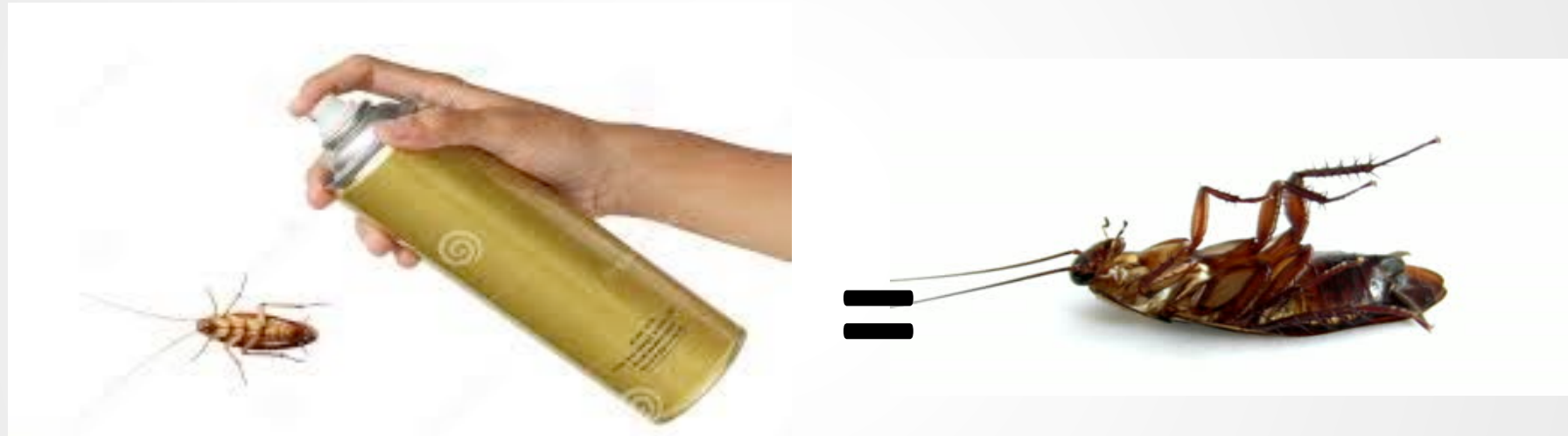
Robins McIntosh on EMS:

Its Complicated!



But finally we are beginning to understand

Robins: We now understand (I hope)
that AHPNS is a toxicosis



Pir Toxin I and Pir Toxin 2
And not a Systemic Bacterial Infection

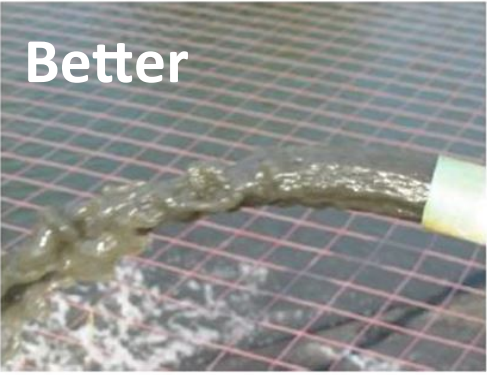
Bio-security in the age of EMS

- ***WSSV: typical bio-secure farm configuration; crab, bird, water and clean PLs***
- ***AHPNS: reduce bacterial food and substrates***
- ***EHP: Clean broodstock, clean PLs, and clean farm — clean water source***

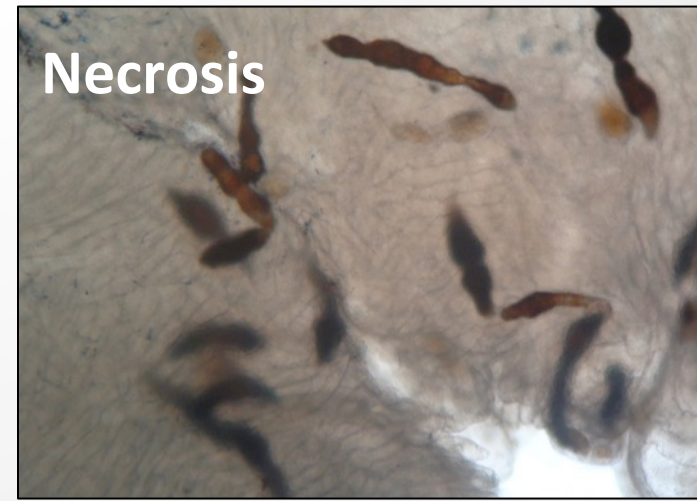
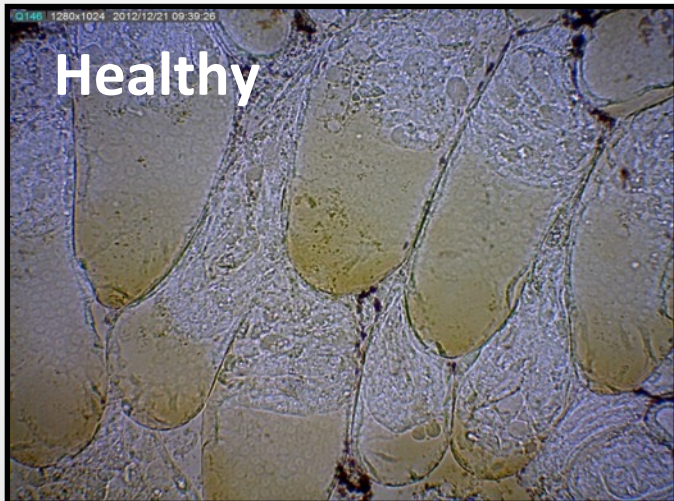
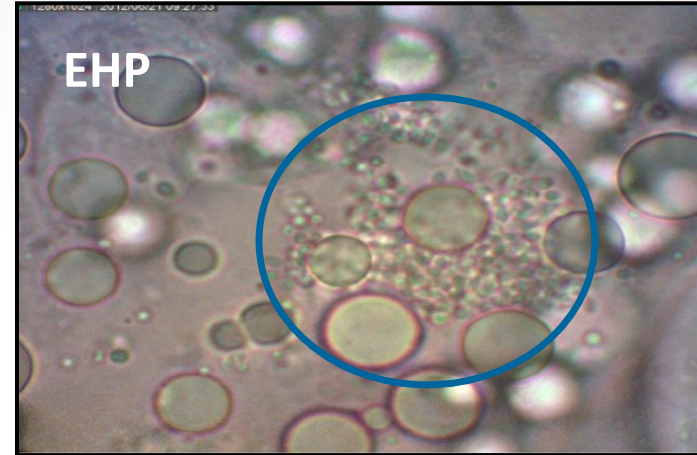
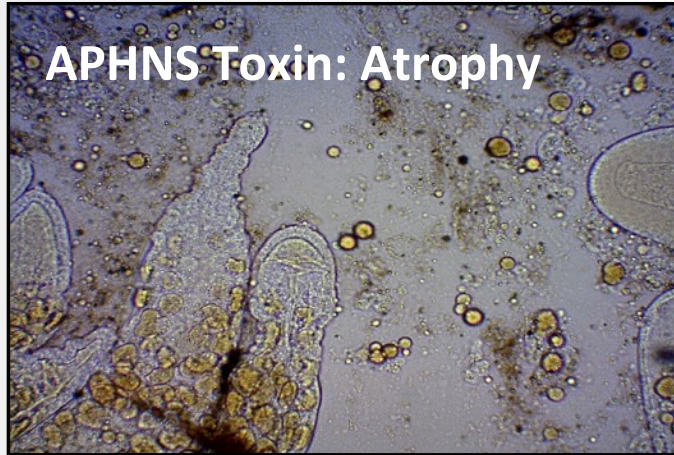
Use of shrimp pond "toilet" to quickly flush sludge, old feed and molts from pond

The Toilet:

The flush



Without healthy post-larvae, genetics don't mean very much



Changed Mindset: Today's farm has greater profits than before AHPNS

	2010	2014	2016
% Culture Pond	77	77	38
DOC	87	59	81
Stock Density /m2	110	79	135
Failure Rate %	0.00	58	0.00
Survival	91	30.5	89
ADG gm/day	0.175	0.28	0.30
MBW	15.5	16.5	25.0
Yield (kg/ha/day)	190	156	333
PI Efficiency tons/mill	13.6	5	21
Total tons	940	108	728
Cost USD/kg (direct)	2.80	13.90	3.25
Farm Profit mill. USD	1.6	-0.80	2.1

Key Practice: Area Management

Farms working together on collaborative biosecurity management plans = better disease control and improved harvest.

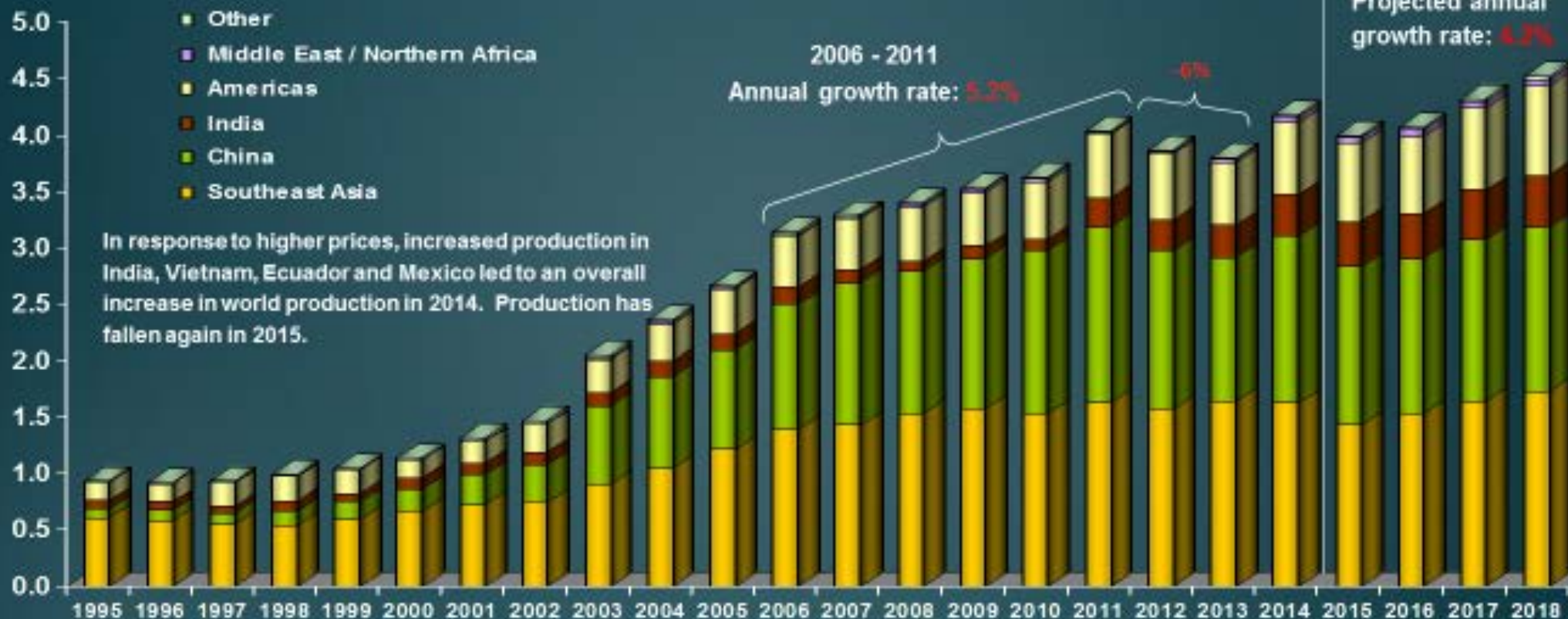
Other benefits:

- ✓ Lower risk = Lower insurance premiums
- ✓ Lower risk = Improved access to finance
- ✓ Opportunity to consolidate & improve technical services & lower cost

**Buyers benefit too!
lower risk in your
supply chain = more
reliable supply**

Shrimp Aquaculture Production by World Region: 1995 - 2018

Million MT



Sources: FAO (2016) for 1995-2011; FAO (2016) and GOAL (2014) for 2012-2014; GOAL (2016) for 2014-2018.

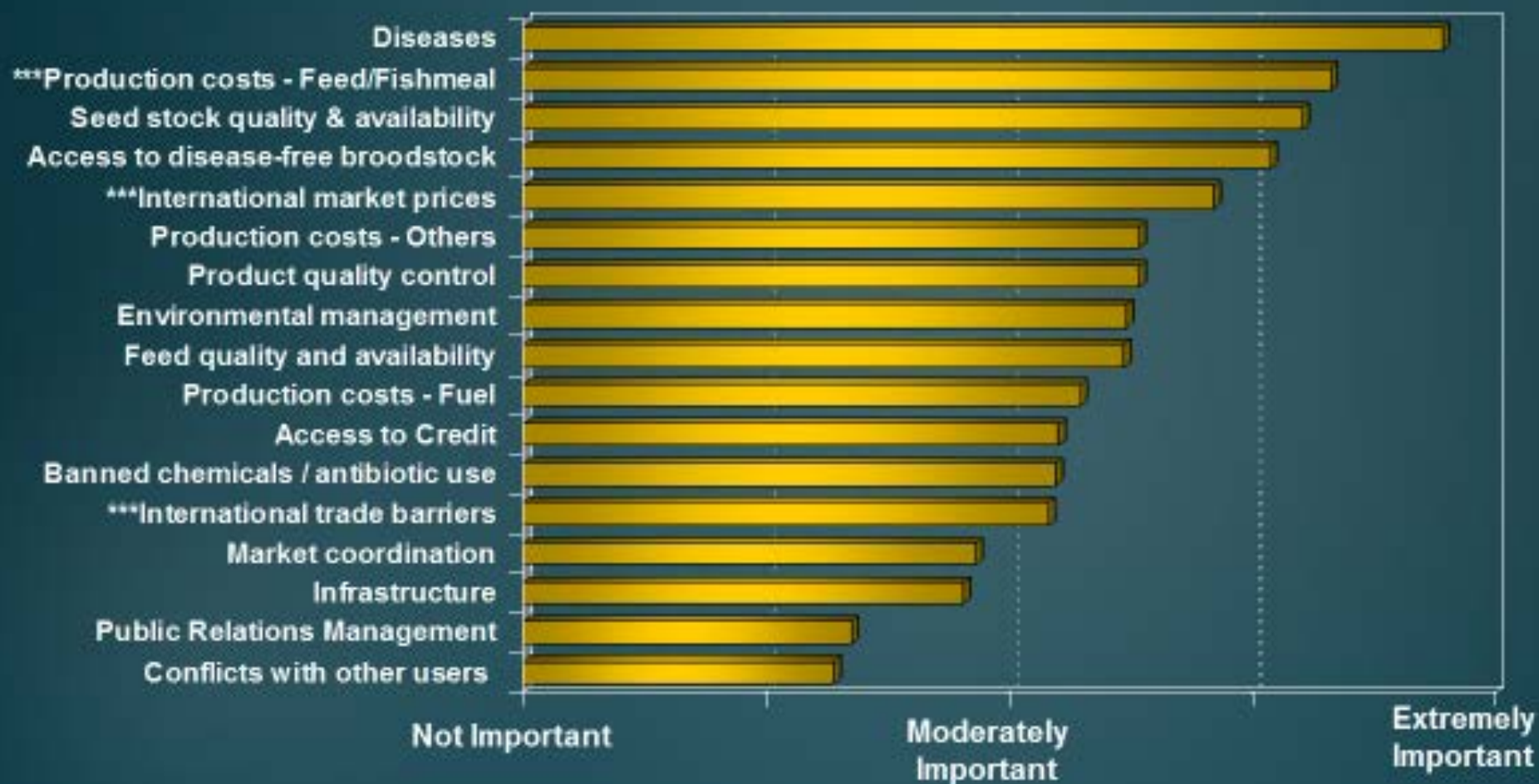
Southeast Asia includes Thailand, Vietnam, Indonesia, Bangladesh, Malaysia, Philippines, Myanmar and Taiwan.

M. rosenbergii is not included.

GOAL 2016 Survey

Issues & Challenges in Shrimp Aquaculture

All Countries



Asterisk indicates a Top 3 issue in GOAL 2007 Survey

Dr. Jim's Shrimp Conclusions

The Numbers:

- Production 2014 to 2015: - 5%
- Production 2015 to 2016: + 2%
- Expected global growth rate 2015 to 2015: + 4%



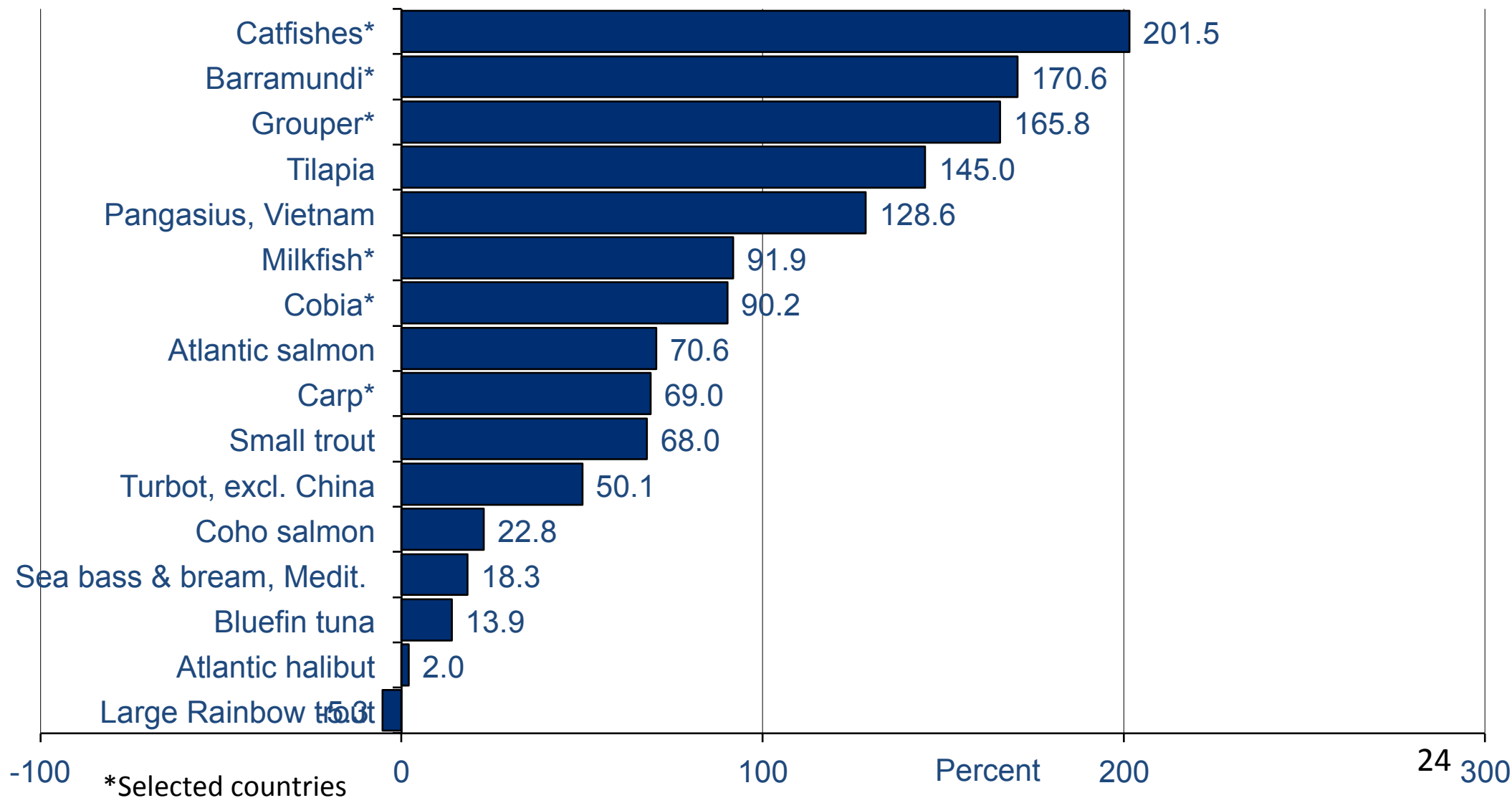
Biggest Constraint? Disease (esp. in Asia), followed by cost and availability of quality seed stock

Expectations for 2017:

- Higher feed costs
- Stronger markets (esp. in Asia)
- Leaning bullish on global economic conditions

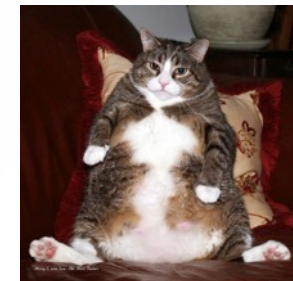
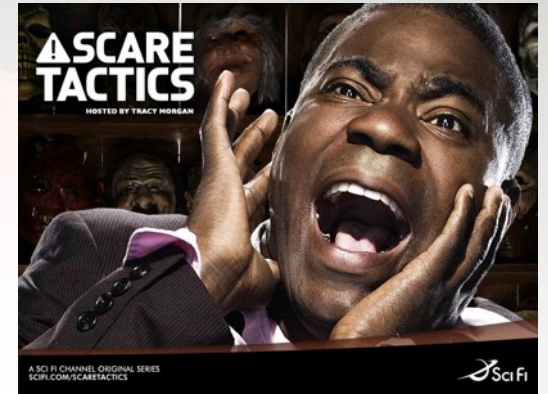
Fish: Did they double in a decade?

Percentage growth, 2006-2016



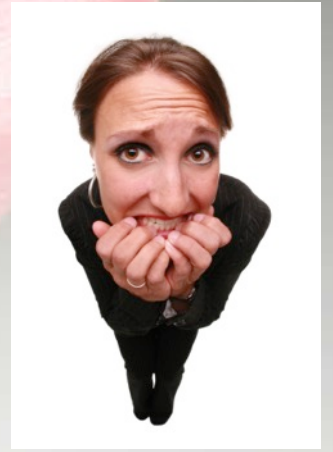
The importance of science in the face of emotional extremism

- Mass mediated risk: An ever-growing chorus of non-experts declaring their perceived risks
- Pangasius study: Science shows that oft-alleged toxicological hazards are NOT a risk.
- Feel free to eat up to 67.5 kg of pangasius a day for life!



And about the shrimp worriers...

- “The Consumer Reports study found bacteria in 60% of the raw shrimp it sampled. Is this number troubling?”
- **Dr. Fitzsimmons, University of Arizona:** “In some cases, yes, but in most cases, no. The majority of bacteria reported in the story were *E. coli* and *Vibrio*. Both of these bacteria are ubiquitous. *E. coli* is found on virtually all our food and surfaces where humans are present. And *Vibrios* are ubiquitous in marine environments. In fact, I would be more concerned if these bacteria were absent, as I would wonder what had killed them.”



Preventing Human Trafficking: A Risk-Based Approach

- Risk-based management is better than incident-based business.
- Establish a control framework built on prevention.
- Map risks along the entire value chain...It's a lot less expensive than a crisis.



Insights from the Market Panelists: We have a great story to tell

- Go beyond the purchasing department and connect with the chef, or he/she may never know our story.
- Advances in production have not necessarily translated into advances in marketing...Again, we must convert the good news of aquaculture's success into compelling stories.
- Like it or not, many consumers perceive wild as preferable to farmed. They probably don't know what we know so...*let's tell the story!*



Insights from the Market Panelists: Timely Issues

- Buyers: Consumers need a unified message, not a war between farmed and wild seafood.
- Consensus on social issues: Doing the right thing is non-negotiable.
- Certifications: Chefs/buyers appreciate them, but dealing with multiple schemes can be difficult.



GSSI: Solution to Certification Soup

GSSI is a global platform and partnership of seafood companies, NGOs, experts, governmental and intergovernmental organizations working towards more sustainable seafood for everyone.

Insights from the Market Panelists: Managing Falsehoods & Negativity

In the immortal words of Bob Fields:

“Once emotion kicks in, science
will not prevail.”



A large school of fish, likely sea bream, swimming in clear blue water. The fish are densely packed and moving in various directions, creating a dynamic pattern of light and shadow. The water is a deep, clear blue, and the fish have a silvery, iridescent sheen. The overall scene is vibrant and healthy, representing a thriving aquatic environment.

**Good aquaculture is
essential for the future**

So let's work together!



16th Year!

GOAL

2016 Guangzhou China

HEALTHY FISH | HEALTHY PEOPLE | HEALTHY PLANET

See you next year for Round 17!

GO  L

2017 DUBLIN, IRELAND

Week of October 2, 2017